



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,984	11/12/2003	Jason K. Shiepe	PES-0069	2983
23462	7590	07/12/2006	EXAMINER	
CANTOR COLBURN, LLP - PROTON			WILKINS III, HARRY D	
55 GRIFFIN ROAD SOUTH			ART UNIT	
BLOOMFIELD, CT 06002			PAPER NUMBER	

1742
DATE MAILED: 07/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/605,984	SHIEPE, JASON K.	
	Examiner	Art Unit	
	Harry D. Wilkins, III	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 7-25 and 27-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 26 and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/12/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I (claims 1-6, 26 and 33) in the reply filed on 23 May 2006 is acknowledged. The traversal is on the ground(s) that a search for groups I and II may be made without serious burden to the Examiner. This is not found persuasive because the electrochemical cell of claim does not include any restriction on how the elemental carbon coating is formed, and could be formed by any known method of forming an elemental carbon coating. As such, restriction is proper between the product (electrochemical cell) and the method of making it (coating process) as per MPEP 806.05(f) since the electrochemical cell could have been made by a multitude of different processes such as any of the processes disclosed in col. 5, lines 21-67 of Fronk et al. Thus, there is a serious burden upon the Examiner to search both the electrochemical cell and the method of coating parts within it.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4-6, 26 and 33 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Fronk et al (US 6,372,376).

Fronk et al clearly anticipate the invention as claimed. Fronk et al teach (see abstract, figures 1 and 3-4 and cols. 2-5) an electrochemical cell including a membrane electrode assembly (4 or 6) (first and second electrodes and a membrane disposed between and in fluid communication with the electrodes), a first cell separator plate (14 or bottom side of 8) opposing the first electrode and defining a first flow field there between with the first flow field being proximate to a first frame member (26 or 30), a second cell separator plate (16 or top side of 8) opposing the second electrode and defining a second flow field there between with the second flow field being proximate to a second frame member (32 or 28). Fronk et al call the separator plates "contact elements", but the structures are identical and perform the same function as Applicant's disclosed "separator plates". Fronk et al teach that the separator plates were coated with an electrically conductive, corrosion resistance material having a resistivity below 50 ohm-cm. Preferably the coating was a mixture of graphite and carbon black impregnated in a resin binder.

Regarding claims 5 and 6, Fronk et al teach (see col. 2, lines 35-51) that the IR drop within the cell should be minimized. Since the resistivity of the elemental carbon coating directly affected the IR drop in the electrical cell by causing voltage loss due to resistance, it would have been obvious to one of ordinary skill in the art to have optimized the applied coating in order to have minimized the resistance of the coating. Further the resistivity of the carbon black/graphite/resin binder of Fronk et al is considered to inherently be less than 1 ohm-cm because the mixture of carbon black/graphite/resin binder described by Fronk et al is substantially identical to the

Art Unit: 1742

disclosed mixture of carbon black/graphite/resin binder such that one of ordinary skill in the art would have expected the coating of Fronk et al to have the same properties as claimed.

Regarding claims 26 and 33, Fronk et al disclose the claimed structure.

Applicant has failed to demonstrate that the recited methods produced a materially different coating than the coating of Fronk et al. Further, Fronk et al teach a surface of an electrochemical cell having an electrical resistivity of less than 1000 ohm-cm.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fronk et al (US 6,372,376) in view of Shiepe et al (US 6,365,032).

The teachings of Fronk et al are described above.

However, Fronk et al fail to teach a pressure pad disposed proximate to the second cell separator plate and retained by a pressure pad separator plate, and wherein the pressure pad separator plate contained the elemental carbon coating.

Shiepe et al teach (see col. 1, line 20 to col. 2, line 5) using a pressure pad and a pressure pad separator plate (protective encasing) for the purpose of maintaining uniform compression in the cell active area which ensured that the electrodes maintained intimate contact with the flow fields over long periods of time.

Therefore, it would have been obvious to one of ordinary skill in the art to have added a pressure pad and a pressure pad separator plate as taught by Shiepe et al to the electrochemical cell of Fronk et al because the pressure pad and pressure pad separator plate provided intimate contact between the electrodes and the fluids flowing within the flow fields to ensure operability of the electrochemical cells for a long period of time.

Further, it would have been obvious to one of ordinary skill in the art to have applied the carbon black/graphite/resin binder coating of Fronk et al to the pressure pad separator plate because the coating of Fronk et al improved conductivity of the electrochemical cell (i.e.-improved efficiency) as well as improved corrosion resistance.

Regarding claim 3, Fronk et al fail to teach first and second flow field members, wherein one or both were coated with the elemental carbon coating.

Shiepe et al teach (see col. 1, line 20 to col. 2, line 5) using flow field members (110, 112).

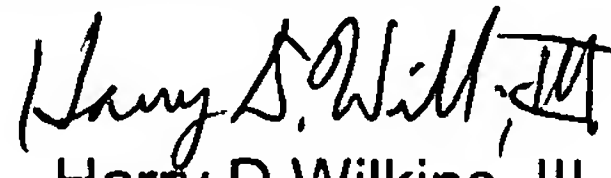
It would have been obvious to one of ordinary skill in the art to have added the flow field members as taught by Shiepe et al in combination with the pressure pad of Shiepe et al to the cell of Fronk et al because the flow field members provided support to keep the compression of the cell from breaking the support plates when the compression was applied.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Harry D Wilkins, III
Primary Examiner
Art Unit 1742

hdw